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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
YABUT, DANIEL D	
ART UNIT	**PAPER NUMBER**
3656	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,814	MASUDA ET AL.	
	Examiner	Art Unit	
	DANIEL YABUT	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 8-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 8-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim **1-4, 8-12, and 16-19** rejected under 35 U.S.C. 103(a) as being unpatentable over Kraeft, US Patent 2,350,468 in view of Bezin, US Patent 4,811,626 and further in view of Valle, Japanese Patent JP 2003072666 A.

Kraeft discloses a crank for a bicycle (Fig. 4) comprising a(n):

Re claim 1

- Outer shell (Fig. 4) made of a fiber-reinforced plastic (C3 / L57-65)

However, **as to claim 1**, Kraeft does **not** expressly disclose the outer shell being made of a fiber-reinforced plastic.

Benzin teaches the use of an outer shell (Fig. 10) being made of a fiber-reinforced plastic (C3 / L57-65) for the purpose of providing a crank that is considerably reduced in weight while retaining excellent mechanical strength (C1 / L60-62).

Regarding claim 1, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the outer shell in Kraeft to be made of a fiber-reinforced plastic, as taught by Benzin, for the purpose of providing a crank that is considerably reduced in weight while retaining excellent mechanical strength.

Kraeft as modified above further discloses the following:

Re claim 1 (cont'd)

- First insert member configured and arranged to introduce a load from a pedal shaft (C2 / L35-49)
- Second insert member coupled to a bracket spindle and configured and arranged to transmit a load to a sprocket (C3 / L1-9).
- Outer shell comprises at least two fiber-reinforced plastic members at least a part of each of which is molded in advance (C3 / L57-65; Benzin). ***Note:*** *Regarding the recitation, "each of which is molded in advance", the MPEP states, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process". As set forth in MPEP 2113, product by process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. Once a product appearing to be substantially the same or similar is found, a 35 USC 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See MPEP 2113.*
- At least two fiber-reinforced plastic members being overlapped and connected to each other so that a connection line thereof appearing outside extends in a longitudinal direction of the crank (C2 / L16-20; see longitudinal connection line between 9a and 9b in at least Fig. 6)

As to **claim 1 further**, Kraeft as modified above does **not** expressly disclose at least a part of said connection line being covered with a fiber-reinforced plastic layer.

Valle teaches the use of at least a part of a connection line (near 14, 12) being covered with a fiber-reinforced plastic layer (36; Fig. 5) for the purpose of providing the structural characteristic required for a crank (para. [007] / L11-14 in translation of Valle).

Regarding **claim 1 further**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide at least a part of said outer shell is covered with a fiber-reinforced plastic layer, as taught by Valle, in the device of Kraeft as modified above for the purpose of providing the structural characteristic required for a crank.

Kraeft as modified above further discloses the following:

Re claim 2

- Outer shell is formed by bonding said at least two fiber-reinforced plastic members to each other (C3 / L57-65; Benzin). ***Note:*** *Please see the above note regarding MPEP 2113.*

Re claim 3

- Outer shell is formed by mechanically connecting said at least two fiber-reinforced plastic members to each other (C3 / L57-65; Benzin). ***Note:*** *Please see the above note regarding MPEP 2113.*

As to **claim 4**, Kraeft as modified above discloses all of the claim limitations, see above, including the use of KEVLAR® (C2 / L36-39 in Benzin), but does **not** expressly disclose 50% or more of reinforcing fibers forming said at least two fiber-reinforced plastic members are in a range of 290 to 700 GPa in elastic modulus and in a range of 40 to 70% in fiber volume content.

Regarding **claim 4**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide 50% or more of reinforcing fibers forming said at least two fiber-reinforced plastic members are in a range of 290 to 700 GPa in elastic modulus and in a range of 40 to 70% in fiber volume content, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See MPEP 2144.05.

Kraeft as modified above further discloses the following:

Re claim 8

- 50 to 100% of the entire length of said connection line is covered with a fiber-reinforced plastic layer (Fig. 5; Valle)

Re claim 9

- Thickness of said fiber-reinforced plastic layer on said connection line is less than the thickness of each of said at least two fiber-reinforced plastic members (see thickness at 36 compared to at 10 in Fig. 5 of Valle)

Re claim 10

- 30% or more of reinforcing fibers of said fiber-reinforced plastic layer on said connection line are oriented at an angle of 45 to 135 degrees relative to said connection line (see angle at 36 between 45 to 135 degrees in Fig. 5 of Valle)

Re claim 11

- Formation of reinforcing fibers forming said fiber-reinforced plastic layer is a woven fabric (para. [008] / L1-6 in translation of Valle).

Re claim 12

- At least one of said insert members is formed from a metal, a resin, a fiber-reinforced plastic or a combination thereof (C3 / L14-21).

Re claim 16

- At least one of said insert members is bonded directly to all of said fiber-reinforced plastic members (C2 / L39-44; C2 / L50-54 in Benzin). ***Note:*** *Please see the above note regarding MPEP 2113.*

As to **claim 17**, Kraeft as modified above discloses all of the claim limitations, see above, including a matrix resin (C2 / L35-37; Benzin) forming said fiber-reinforced plastic members, but does **not** expressly disclose wherein a Barcol hardness of an adhesive used for said bonding is smaller than that of the matrix resin forming said fiber-reinforced plastic members.

Regarding **claim 17**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a Barcol hardness of an adhesive used for said bonding is smaller than that of the matrix resin forming said fiber-reinforced plastic members, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See MPEP 2144.05.

Kraeft as modified above further discloses the following:

Re claim 18

- Method of producing a crank for a bicycle comprising the steps of:
    - Premolding a plurality of fiber-reinforced plastic members using a single-faced mold or a double-faced mold (C3 / L57-65; C1 / L48-51; Benzin)

- Integrating said plurality of fiber-reinforced plastic members premolded (C2 / L16-20; C3 / L57-65 in Benzin)
- Fiber-reinforced plastic members are overlapped and connected to each other and a connection line thereof appearing outside extends in a longitudinal direction of the crank (C2 / L16-20; see longitudinal connection line between 9a and 9b in at least Fig. 6), and at least part of the connection line is covered with a fiber-reinforced plastic layer (Fig. 5; Valle)

Re claim 19

- Plurality of fiber-reinforced plastic members molded in said premolding step are integrated as an outer shell of a first insert member configured and arranged to introduce a load from a pedal shaft and a second insert member coupled to a bracket spindle and configured and arranged to transmit a load to a sprocket (Fig. 2; C3 / L57-65, C1 / L48-51, C2 / L55-57, C2 / L64-66 in Benzin).

3. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kraeft, US Patent 2,350,468 in view of Bezin, US Patent 4,811,626, and further in view of Valle, Japanese Patent JP 2003072666 A, as applied to claims 1-4, 8-12, and 16-19 above, and in further view of Ording et al., US PG Publication 2003/0051573 A1.

Kraeft as modified above discloses all of the claim limitations, see above, but does **not** expressly disclose a formation of reinforcing fibers forming said at least two fiber-reinforced plastic members is a unidirectionally arranged formation of continuous fibers or a woven fabric.

Ording et al. teaches the use of a formation of reinforcing fibers forming said at least two fiber-reinforced plastic members is a unidirectionally arranged formation of continuous fibers or

a woven fabric (para. [0060] / L3-6) for the purpose of countering deflections and forces that the crank will experience during a pedal stroke (para. [0060] / L6-8).

Regarding **claim 5**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a formation of reinforcing fibers forming said at least two fiber-reinforced plastic members is a unidirectionally arranged formation of continuous fibers or a woven fabric, as taught by Ording et al., in the device of Kraeft as modified above for the purpose of countering deflections and forces that the crank will experience during a pedal stroke.

4. **Claims 13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraeft, US Patent 2,350,468 in view of Bezin, US Patent 4,811,626, and further in view of Valle, Japanese Patent JP 2003072666 A, as applied to claims 1-4, 8-12, and 16-19 above, and further in view of Whatley, US Patent 5,632,940.

As to **claim 13**, Kraeft as modified above discloses all of the claim limitations, see above, but does **not** expressly disclose at least one of said insert members is formed from a combination of an aluminum alloy and a fiber-reinforced plastic.

Whatley teaches the use of at least one of said insert members is formed from a combination of an aluminum alloy and a fiber-reinforced plastic for the purpose of providing reinforcement to these elements (C3 / L35-37).

Regarding **claim 13**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide at least one of said insert members is formed from a combination of an aluminum alloy and a fiber-reinforced plastic, as taught by Whatley, in the device of Kraeft as modified above for the purpose of providing reinforcement to these elements.

Kraeft as modified above further discloses the following:

Re claim 14

- At least one of said insert members is formed from a heat treated aluminum alloy having a fatigue strength of 10 kgf/mm^2 or more (C3 / L64-67; Whatley). ***Note:*** *Regarding the recitation "formed from a heat treated aluminum alloy", please see the above note regarding MPEP 2113.*

5. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kraeft, US Patent 2,350,468 in view of Bezin, US Patent 4,811,626, further in view of Valle, Japanese Patent JP 2003072666 A, as applied to claims 1-4, 8-12, and 16-19 above, and further in view of Nishimura et al., US PG Publication 2002/0150774 A1.

As to **claim 15**, Kraeft as modified above discloses all of the claim limitations, see above, but does **not** expressly disclose at least one of said insert members is formed from an aluminum alloy formed with an oxide skin.

Nishimura et al. teaches the use of insert members (86) being formed from an aluminum alloy formed with an oxide skin (para. [0057] / L5-6; para. [0058] / L1-6; para. [0059] / L3-7) for the purpose of preventing scratches and corrosion (para.[0060] / L1-6).

Regarding claim 15, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide at least one of said insert members is formed from an aluminum alloy formed with an oxide skin, as taught by Nishimura et al., in the device of Kraeft as modified above for the purpose of preventing scratches and corrosion.

As to **claim 15 further**, Kraeft as modified above does **not** expressly disclose the oxide skin having a thickness of 3 to 30 micrometers.

Regarding claim 15 further, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide the oxide skin having a thickness of 3 to 30 micrometers., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See MPEP 2144.05.

Response to Arguments

Applicant's arguments with respect to claims 1-5, and 8-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL YABUT whose telephone number is (571)270-5526.

The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard W. Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL YABUT/
Examiner, Art Unit 3656
3/10/2010

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656